

Work Order ID 124890

Thursday, September 25, 2014 1:09:34 PM

124890

Page 1

Item ID: D407-667-205RLC Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Aft Crosstube - High 407
 Start Date: 9/25/2014 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 9/25/2014 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan: MLS Date: 14-09-25 Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D407-667-245	Rev F/DEO								MLS 14-02-05
100	Document Control	0.00			DAS				
100	DOCUMENT CONTROL				06				
DC	Memo	0.00			9-09				
Doc.Control -USB or Paperwork	Photocopy bluefile and create labels as per PPP D407-667-205 CHG008								
110	Pick Kit	0.00							
110	Packaging								
Packaging	Memo	0.00							
Packaging									
120		0.00							
120	BENDING MACHINE - CROSSTUBES								
CNC Bend 1	Memo	0.00							
CNC Delta 100 Bender	1-Bend tube as per Dwg D407-667-245 using CNC bender program 407 Aft and Folio 21								

DEC 30 2014

BL 14-10-16

BL/TW 14-10-16

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Accept

N900040100Setup Start ***NS1***

Revision ID:

Item Name: Aft Crosstube - High 407

Stop ***NS2***

Start Date: 9/25/2014 Start Qty: 1.00

1

Cust Item ID:

Required Date: 9/25/2014 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	QC15- Crosstube Dimensional Check	0.00							
130									
QC	Memo	0.00							
Quality Control									

DAS
03
9-89 14-10-20

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 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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140

140

Crosstubes

Crosstubes

Crosstubes

Memo

0.00

***** ENSURE PROPER JIG POSITIONING BEFORE DRILLING*****
 VERIFIED BY: JW *****

1-Drill pilot holes in tube using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Drill all (3) top holes. Holes facing inboard. Drill and Ream all holes in tube to finish size using drill Jig DT8583 & DT8584 as per Dwg D407-667-245

***** ENSURE PROPER JIG POSITIONING BEFORE DRILLING*****
 VERIFIED BY: JW *****

2- Drill fwd rivet holes using drill Jig DT8787 fwd as per Dwg D407-667-245.
 Note: FWD side has 3X top holes facing inboard.

3- C'sink holes as per dwg D407-667-245. Allow rivet to sit below surface to compensate for paint.

4- Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins. Drill ONLY 2 top holes ONLY plug most bottom hole to prevent accidental drilling. Drill holes and ream using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Drill only the top (2) holes. Drill & ream the top (2) holes to finish size using drill Jig DT8583 & DT8584 as per Dwg D407-667-245

***** ENSURE PROPER JIG POSITIONING BEFORE DRILLING*****
 VERIFIED BY: JW *****

5-Drill aft rivet holes using drill Jig DT8787 aft as per Dwg D407-667-245.

JW/14-10-22

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Item ID: D407-667-205RLC Accept ***N900040100*** Setup Start ***NS1***
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 Start Date: 9/25/2014 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 9/25/2014 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Drill only the top (2) holes.

***** ENSURE PROPER JIG POSITIONING BEFORE DRILLING*****
 VERIFIED BY: SW *****

6- C'sink holes as per dwg D407-667-245. Allow rivet to sit below surface to compensate for paint.

7- Scribe tube to identify on the inner chamfer in the cuff D# and B#

8-*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***Debur
 & Inspect for surface damage. Repair damage within limits as per Dwg D407-667-245

SW/BC
14-10-22

DAS
46
 9-89

14/10/27

150

150

QC

Quality Control

QC5- Inspect part completeness to step on W/O 0.00

Memo 0.00

*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

DAS
38
 9-89

1 Ø

DAS
49
 9-89

14/10/28

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Item ID: D407-667-205RLC Accept *N9000040100* Setup Start *NS1*
 Revision ID: Stop *NS2*
 Item Name: Aft Crosstube - High 407
 Start Date: 9/25/2014 Start Qty: 1.00 *1* Cust Item ID:
 Required Date: 9/25/2014 Req'd Qty: 1.00 *1* Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
160		0.00							
160									
HandFXtube	Memo	0.00							
Hand Finishing Crosstubes	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								
	1- CLEAN CROSSTUBE WITH WASH'N WIPE								
180	Outsource process - NDT per QSI038 4.1	0.00							
180									
Outsource2	Memo	0.00							
Outsource process - NDT	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								
	Liquid Penetrant Inspection as per QSI 0380								
	Issue P/O: 26273 LPI as per ASTM 1417								
	Level 2 Attach copy of NDT results to work order								
190	Packaging	0.00							
190									
Packaging	Memo	0.00							
Packaging	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								
	Ensure copy of NDT results attached to work order.								

OCT 28 2014

14/10/29 0

1 X 8014-10-29

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Item ID: D407-667-205RLC

Accept

N900040100Setup Start ***NS1***

Revision ID:

Item Name: Aft Crosstube - High 407

Stop ***NS2***Start Date: 9/25/2014 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 9/25/2014 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
210		0.00							DAS
210	SprayPaint					1			41
SprayPaint	Memo	0.00							9-89
Spray Painting	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								14-10-29

1-Prime inside and outside crosstube as per DEO D407-667-245 and QSI 005 4.2

PRIME: 129807

Start Time: 3:00

Finish Time: 3:40

Mask underside of crosstube as shown

2-Paint outside crosstube with White Imron as per QSI 005 4.2

PAINT: 130531

Start Time: 7:00

Finish Time: 7:45

3- Apply clear coat as per dwg

Clear Coat Batch: 130308

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Item ID: D407-667-205RLC

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N900040100Setup Start ***NS1***

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Item Name: Aft Crosstube - High 407

Stop ***NS2***

Start Date: 9/25/2014 Start Qty: 1.00

1

Cust Item ID:

Required Date: 9/25/2014 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run Start ***NR1***

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

220

QC14- Inspect Spray Paint

0.00

220

QC

Memo

0.00

Quality Control

Then, Wrap in plastic bag to protect from scratches

① 14-11-07 PD

124890

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N900040100

Setup Start *NS1*

Stop *NS2*

Start Date: 9/25/2014 **Start Qty:** 1.00 ***1***

Cust Item ID:

Required Date: 9/25/2014 **Req'd Qty:** 1.00 ***1***

Customer:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

230

0.00

230

Crosstubes

0.00

Crosstubes

Crosstubes

Memo

1- Install chafing shield as per DEO D407-667-245. Top holes should be facing up.

A/R Proseal 890 Batch: 130090
EXP: 11/15

2- Lightly scuff the bonded area using a 320 grit sand paper and clean the area with 41058 wash 'n' wipe

3-Install support with Scotch-Weld DP460 and install clamps as per DEO Dwg D407-667-245 using installaiton jig DT9025. Torque clamps as per dwg

A/R Scotch-Weld DP460 Batch: 129 299
EXP: 6/15

LET CURE FOR 24 HOURS

CURE TIME:

START: 14.10.31

FINISH: 1-4-10-07

4-Install nut plates as per Dwg D407-667-245. Touch-up rivet heads with Imron paint.

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N900040100Setup Start ***NS1***

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Item Name: Aft Crosstube - High 407

Stop ***NS2***Start Date: 9/25/2014 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 9/25/2014 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
240	QC5- Inspect part completeness to step on W/O	0.00							DAS 38 9-89
240									
QC	Memo	0.00							
Quality Control	***RE-CHECK TORQUE ON CLAMPS AFTER ADHESIVE HAS CURE FOR 24HOURS AS PER DWG DEO***								14-11-24 PTG Last page
250	Pick Kit	0.00							
250									
Packaging	Memo	0.00							
Packaging									
260	QC4- 100% Inspect kits for completeness	0.00							
260									
QC	Memo	0.00							
Quality Control									DAS 06 9-89

DEC 30 2014

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Item ID: D407-667-205RLC

Accept

N900040100Setup Start ***NS1***

Revision ID:

Item Name: Aft Crosstube - High 407

Stop ***NS2***Start Date: 9/25/2014 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 9/25/2014 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***
Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
270		0.00							
270	Packaging				DAS				
Packaging	Memo	0.00			46	DAS			
Packaging	Identify and in kanban rack Location: <u>043</u>				9-89	06 9-89			DEC 30 2014
280	QC21- Final Inspection - Work Order Release	0.00							
280									
QC	Memo	0.00							
Quality Control									MLJ 15-01-05



Picklist Print

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Work Order ID: 124890

124890

Parent Item: D407-667-205RLC

D407-667-205RI C

Parent Item Name: Aft Crosstube - High 407

Start Date: 9/25/2014

Required Date: 9/25/2014

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP REV:A 14.09.24 NEW ISSUE II VERF:DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

D407-667-205TRN

Manufactured

No

B14545

110

Each

0.0000

1

1

14-10-16

D407-667-205TRN

Crosstube Turning Detail

D2873-043

Manufactured

No

230

Each

44.0000

2

2

D2873-043

Nut Plate Assembly

Location

Loc Qty

Loc Code

LG052

44

107964

4

113050

32

114550

8

D2873-045

Manufactured

No

230

Each

47.0000

2

2

D2873-045

Nut Plate Assembly

Location

Loc Qty

Loc Code

LG052

47

113144

7

113886

40

D2894-1

Manufactured

No

230

Each

8.0000

1

1

D2894-1

2.75 Support

Location

Loc Qty

Loc Code

LG052

8

105623

6

113132

2

DAS

9

9-89

part is good to reuse

14-121

Picklist Print

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Work Order ID: 124890

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Parent Item: D407-667-205RLC

D407-667-205RLC

Parent Item Name: Aft Crosstube - High 407

Start Date: 9/25/2014

Required Date: 9/25/2014

Start Qty: 1.00

Required Qty: 1.00

D3190-1 Manufactured No

230 Each 13.0000 2 2

D3190-1

Chaffing Shield

CR 14-10-31

Location

Loc Qty

Loc Code

LG053

13

105834

3

109948

10

D3595-063-450 Manufactured No

230 Each 200.0000 2 2

D3595-063-450

Rubber Cushion

CR 14-10-31

Location

Loc Qty

Loc Code

FG

15

88422

5

94274

10

LG050

4

118828

4

LG051

181

109526

2

~~115083~~

72

115780

100

117650

7

MS20601-AD4W8 Purchased No

230 Each 421.0000 14

MS20601-AD4W8

RIVET

~~14~~

22

CR 14-10-31

Location

Loc Qty

Loc Code

ST310

421

M126637

24

M127813

24

M128429

73

M128650

300

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Shop Packet Print

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Picklist Print

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Work Order ID: 124890

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Parent Item: D407-667-205RLC

D407-667-205RI C

Parent Item Name: Aft Crosstube - High 407

Start Date: 9/25/2014

Required Date: 9/25/2014

Start Qty: 1.00

Required Qty: 1.00

MS21920-22

Purchased

No

230

Each

178.0000

4

4

MS21920-22

Clamp

CA 14.10.31

Location

Loc Qty

Loc Code

LG050

178

M127255

2

M128636

176

MS21920-25

Purchased

No

230

Each

93.0000

2

2

MS21920-25

Clamp

CA 14.10.31

Location

Loc Qty

Loc Code

FG

2

120920

2

LG050

91

M129592

2

M130279

14

M130286

25

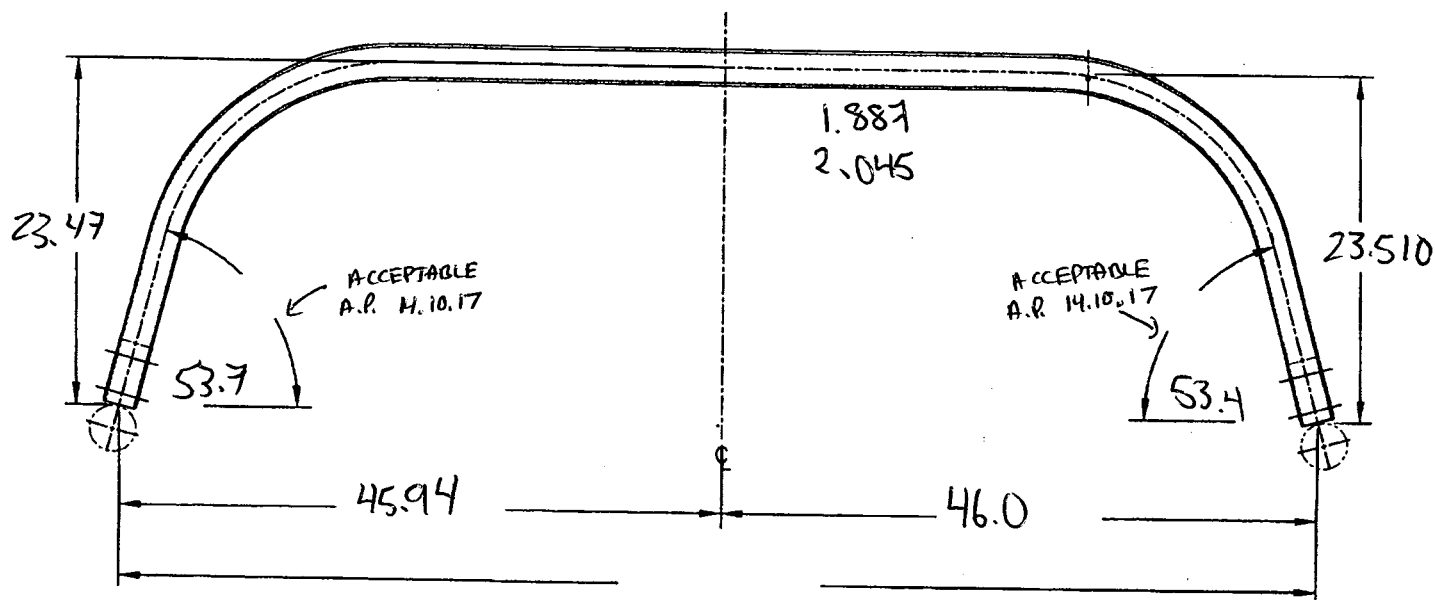
M130400

50

2

DART AEROSPACE LTD		Work Order:	124890
Description: Crosstube High Aft (407)		Part Number:	D407-667-205
Inspection Dwg: D407-667-245	Rev: F	Page 1 of 1	

Required Dimension	Min	Max
Height	23.39	23.65
1/2 Span	45.79	46.05
Angle	54	56
Total Span	91.58	92.100
Bending Passes	6	--
Crushing	--	6%



	Side A	Side B
Bending Passes	28	28
Crushing	3.9	4.0
Comments		

QC15 Inspection	14-10-20
Date	

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	09.06.22	Dwg Rev updated	KJ	
C	11.08.22	Dimensions updated	KJ	
D	11.09.30	Dimensions updated	KJ	
E	12.04.16	Added bending, crushing dimensions	KJ	

Item	QTY -245	PART NUMBER	DESCRIPTION
1	X	D407-667-245	CROSSTUBE ASSEMBLY (407 HIGH AFT)
2	1	D6011-115	CROSSTUBE
3	2	D2856-400-773	ABRASION STRIP
4	2	D2873-043	NUT PLATE
5	2	D2873-045	NUT PLATE
6	1	D2894-1	SUPPORT
7	2	D3190-1	CHAFING SHIELD
8	2	D3595-063-430	RUBBER CUSHION
9	14	MS20601AD4W8	RIVET (OR NAS9302B-4-8)
10	4	MS21920-22	CLAMP
11	2	MS21920-25	CLAMP (OR MS21920-24)
12	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947- 100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6011-115
FINISHED LENGTH = 112.91±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D407-667-245" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: 27.7 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY. TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 6 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2894-1 CENTER SUPPORT USING A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-25 CLAMPS WITH D3595-063-430 RUBBER CUSHIONS TO SECURE D2894-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE CROSSTUBE SUPPORT.
NOTE: MS21920-24 CLAMPS CAN BE USED TO ACCOMMODATE VARYING DIAMETERS. ENSURE THERE IS A MINIMUM OF 1.5 THREADS IN SAFETY ON THE NUTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) INSTALL D2856-400-773 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE, PER QSI 035.
- 16) INSTALL D3190-1 CHAFING SHIELDS SO THAT OVERLAP IS ON BOTTOM SIDE OF CROSSTUBE OPPOSITE D2894-1 SUPPORT.
- 17) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER

NO. 174 890 ML5
14 09-25

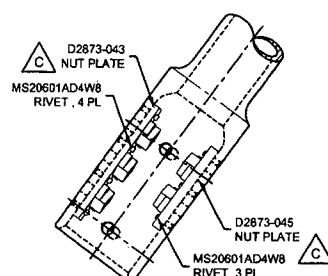
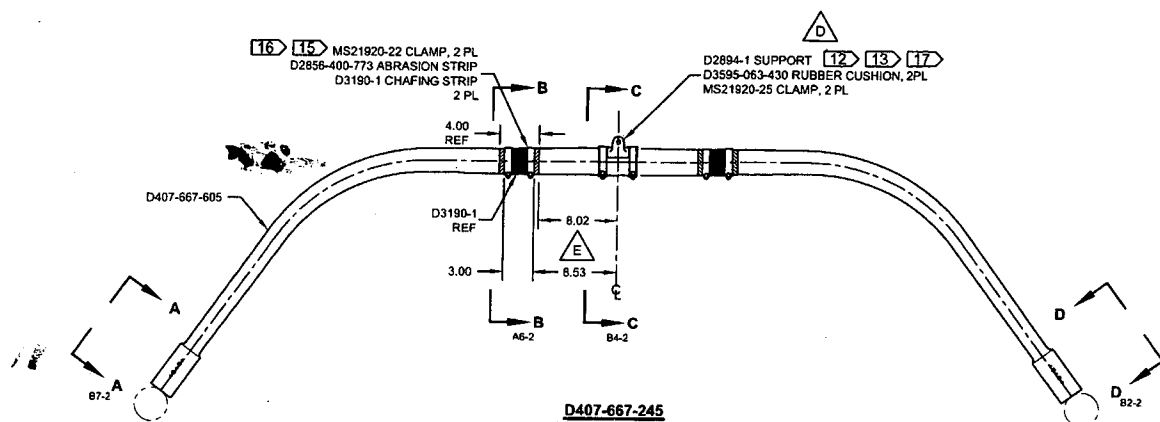
@DEO ATTACHED

RELEASED
08/11/12

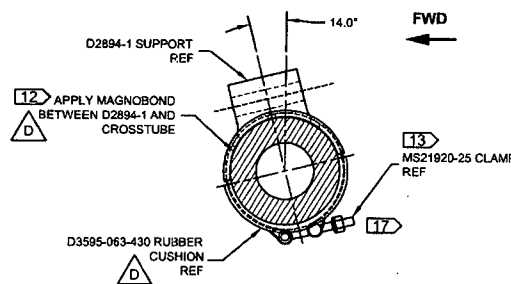
F	REFORMAT NOTES TO NEW STANDARDS (ZN B8-1); RELOCATED FLAG # 6 (ZN A8-3) PER NCR 210; REMOVED REF. & ADD TOLERANCES (ZN C6-3, C4-3 & D2-3)	RF	08.11.06
E	8.02 AND 8.53 WERE 8.40 AND 8.90 (ZN D5-2); REORGANIZED VIEWS AND REFORMATED DRAWING TO CURRENT STANDARDS. REASONS: CLAMPS MOVED 0.375 TOWARD CL TO ELIMINATE INTERFERENCE WITH AIRCRAFT MOUNTS. REFERENCE: PAR#08-21 AND ECN#1225	MB	08.07.24
D	ADD VIEW FOR OEM SKID HOLES. ROTATE ORIENTATION OF CLAMPS SECTION F-F, REMOVE -851 ABRASION STRIP. ADD MAGNOBOND 6398, ADD CUSHION	PH	07.02.07
C	ADD HOLES AND NUT PLATES FOR COMPATIBILITY WITH BHT/AA SKIDTUBES	PH	05.07.26
B	ADD CHAFING SHIELD	CP	03.05.21
A	NEW ISSUE	CP	02.05.13
REV.	DESCRIPTION	BY	DATE
DESIGN	9P		
DRAWN	RF		
CHECKED	9P		
MFG. APPR.	9P		
APPROVED	9P		
DE APPR.	9P		
DATE	08.11.06		

DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D407-667-245	REV. F SHEET 1 OF 4
TITLE CROSSTUBE ASSY (407 HIGH AFT)	SCALE NTS
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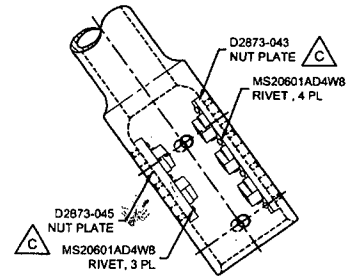
8 7 6 5 4 3 2 1



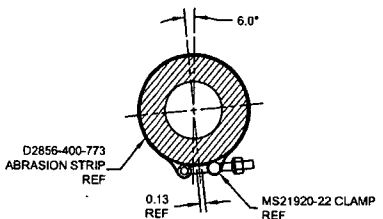
C7-2 VIEW A-A CUFF DETAIL
SCALE 4X



C4-2 SECTION C-C
SCALE 4X



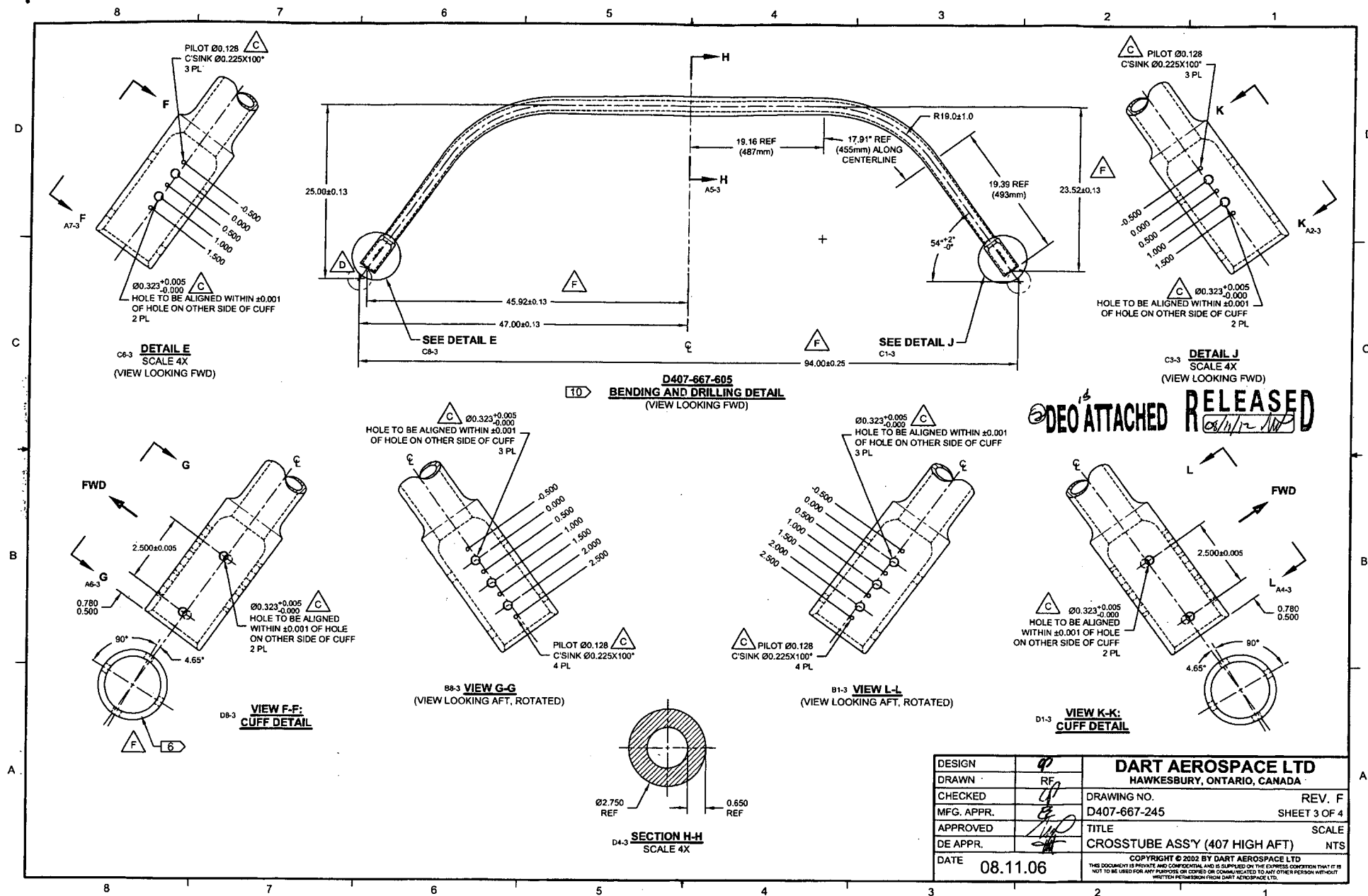
C2-2 VIEW D-D CUFF DETAIL
SCALE 4X



C5-2 SECTION B-B
SCALE 4X, 2 PL

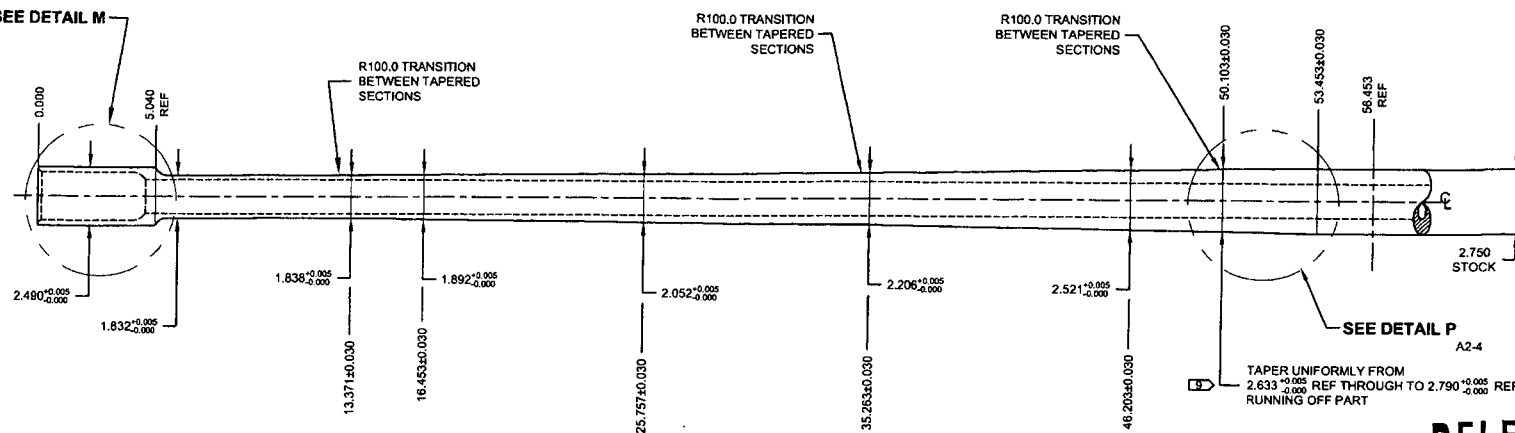
2 DEO ATTACHED
RELEASED
08/11/12

DESIGN	40	DART AEROSPACE LTD	
DRAWN	RE	HAWKESBURY, ONTARIO, CANADA	
CHECKED	40	DRAWING NO.	REV. F
MFG. APPR.	40	D407-667-245	SHEET 2 OF 4
APPROVED	40	TITLE	SCALE
DE APPR.	40	CROSSTUBE ASS'Y (407 HIGH AFT)	NTS
DATE	08.11.06	COPYRIGHT © 2002 BY DART AEROSPACE LTD	
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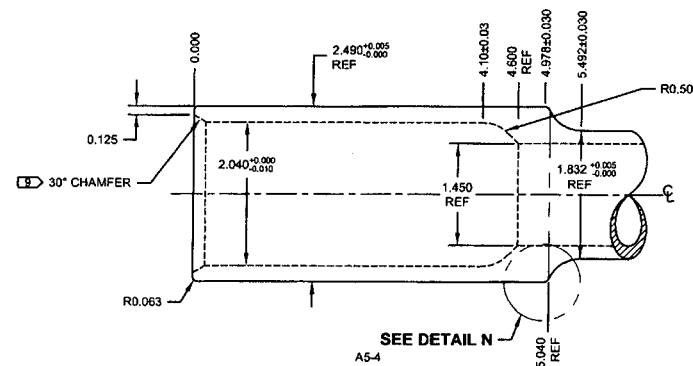


DESIGN	40	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	40	DRAWING NO.	REV. F
MFG. APPR.	40	D407-667-245	SHEET 3 OF 4
APPROVED	40	TITLE	SCALE
DE APPR.	40	CROSSTUBE ASSY (407 HIGH AFT)	NTS
DATE	08.11.06	COPYRIGHT © 2002 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

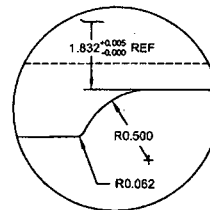
SEE DETAIL M
A7-4



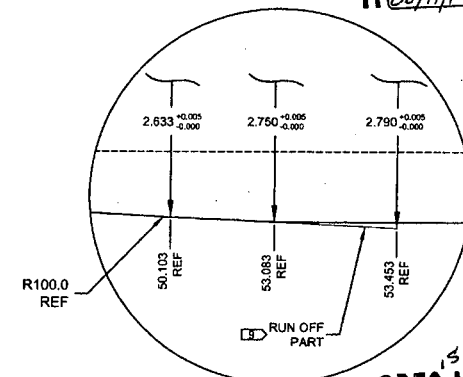
D407-667-245 MACHINING DETAIL



DETAIL M: CROSSTUBE CUFF
SCALE 3X



DETAIL N: CUFF TRANSITION
SCALE 2X



DETAIL P: TAPER RUN-OFF
NOT TO SCALE

RELEASED
08/11/12

DEO ATTACHED

DESIGN	47	DART AEROSPACE LTD	
DRAWN	RE	HAWKESBURY, ONTARIO, CANADA	
CHECKED	47	DRAWING NO.	REV. F
MFG. APPR.	47	D407-667-245	SHEET 4 OF 4
APPROVED	47	TITLE	SCALE
DE APPR.	47	CROSSTUBE ASS'Y (407 HIGH AFT)	NTS
DATE	08.11.06	COPYRIGHT © 2002 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR LOANED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

DRAWING NO. D407-667-245	TITLE CROSSTUBE ASSY (407 HIGH AFT)	REV. F	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D407-667-245-F-1	SHEET NO. SHEET 1 OF 2	SCALE NTS
DRAWN	CHECKED	MFG. APPR.	APPROVED	DE APPR.			
DATE 11.04.08	DATE 11.04.12	DATE 11.04.12	DATE 11.04.12	DATE 11.04.12			

PURPOSE:

REMOVED ABRASION STRIP IN FAVOR OF A THIN LAYER OF PROSEAL 890.

CHANGE:

PARTS LIST IS AMENDED AS FOLLOWS:

IS:

Item	Qty -245	Part Number	Description
3	0	D2856-400-773	ABRASION STRIP

WAS:

3	2	D2856-400-773	ABRASION STRIP
---	---	---------------	----------------

NOTES 2 AND 15, SHEET 1 ARE AMENDED AS FOLLOWS:

IS:

- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
MASK UNDERSIDE OF CROSSTUBE AS SHOWN (HATCHED AREA) AND
PAINT OUTSIDE PER DART QSI 005 4.2
REMOVE MASKING AND APPLY CLEAR COAT
- 15) APPLY A THIN COAT OF PROSEAL 890 ON INSIDE CONCAVE SURFACE OF D3190-1
CHAFING SHIELDS AND LET CURE PER MANUFACTURER'S INSTRUCTIONS. INSTALL
PROSEALED D3190-1 CHAFING SHIELDS ONTO CROSSTUBE BY APPLYING A THIN COAT
OF PROSEAL 890 ONTO CROSSTUBE. BE SURE TO ELIMINATE ANY AIR GAPS.

WAS:

- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 15) INSTALL D2856-400-773 ABRASION STRIP WITH A 0.13 REF GAP ON BOTTOM SIDE OF
CROSSTUBE PER QSI 035.

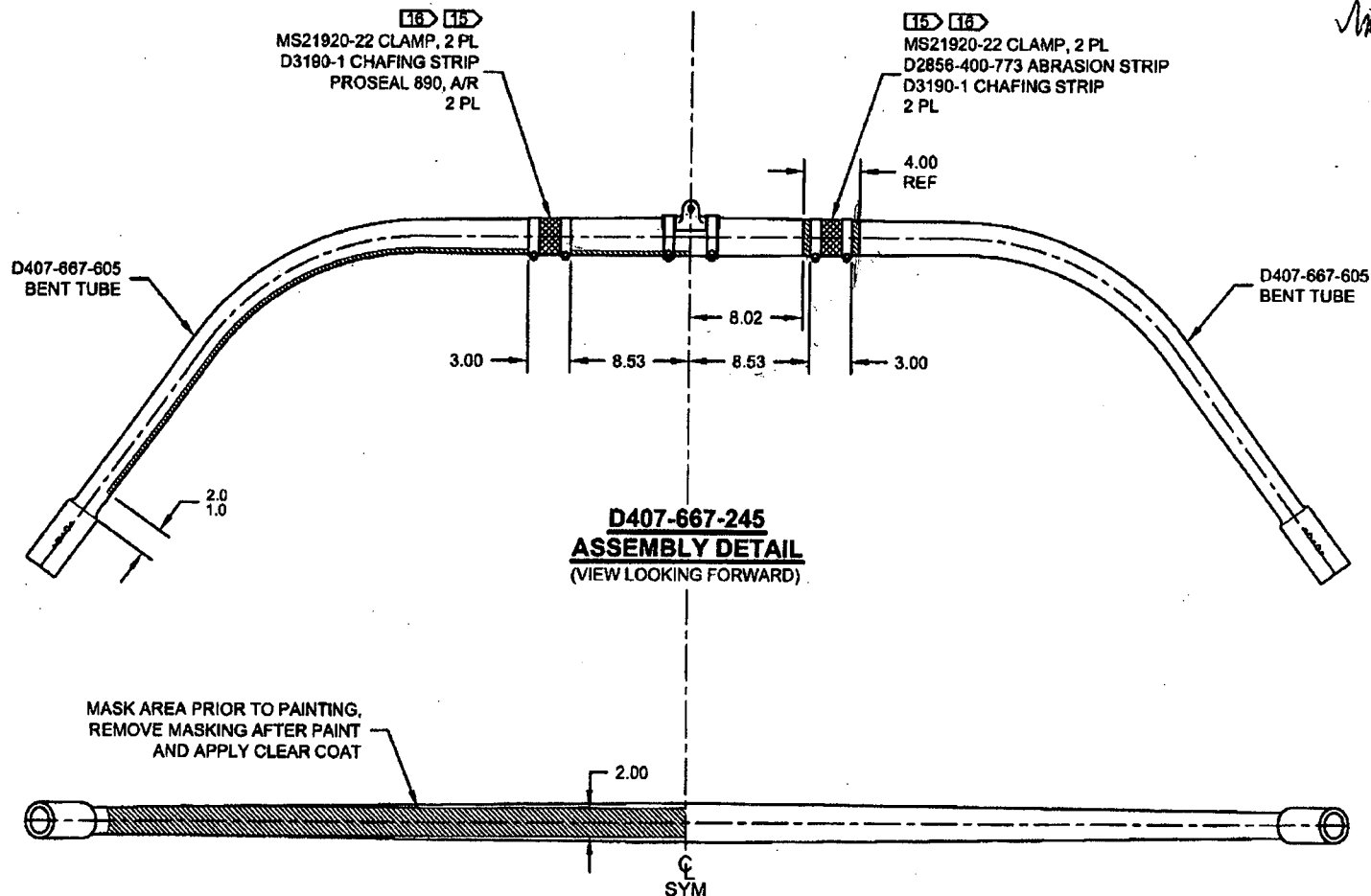
RELEASED
2011-04-18
[Signature]

DRAWING NO. D407-667-245	TITLE CROSSTUBE ASSY (407 HIGH AFT)	REV. F	DART AEROSPACE LTD ENGINEERING ORDER	D.E.O. NO. D407-667-245-F.1	SHEET NO. SHEET 2 OF 2	SCALE NTS
DRAWN	CHECKED <i>up</i>	MFG. APPR. <i>E</i>	APPROVED <i>WP</i>	DE APPR. <i>H</i>		
DATE 11.04.08	DATE 11.04.11	DATE 11.04.12	DATE 11/04/12	DATE 11.04.12		

IS:

WAS:

RELEASE
2011-04-18
WP



DRAWING NO. D407-667-245	TITLE CROSSTUBE ASS'Y (407 HIGH AFT)	REV. F	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D407-667-245-F-2	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>qp</i>	CHECKED <i>ASS</i>	MFG. APPR. <i>E</i>	APPROVED <i>MP</i>		DE APPR. <i>MP</i>		
DATE 11.09.07	DATE 11.09.19	DATE 11.09.19	DATE 11.09.19		DATE 11.09.19		

PURPOSE:

REPLACE MAGNOBOND WITH 3M DP460 SCOTCH-WELD EPOXY ADHESIVE

CHANGE:

IS:

Item	Qty -245	Part Number	Description
12	A/R	SCOTCH-WELD DP460	EPOXY ADHESIVE, 3M SCOTCH-WELD

WAS:

12	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
----	-----	----------------	---

NOTE 12 & 17, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) INSTALL D2894-1 CENTER SUPPORT USING A 0.04" TO 0.07" THICK LAYER OF SCOTCH-WELD DP460 PER QSI 015. LET CURE FOR 24 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. **PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER ADHESIVE HAS CURED FOR 24 HOURS.**

WAS:

- 12) INSTALL D2894-1 CENTER SUPPORT USING A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

RELEASED
2011-09-29
MP

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skyservice Work Order Traveler

Sky Service F.B.O. Inc.

DOT APP 53-89 / EASA 145.7142 / BDA AMO 385

WO #: MWO22577	Customer: Dart Aerospace Ltd.	Dept: NDT YUL	Reference: 26273
Descr:	PN:	S/N:	Qty: 1
Make:	Model:	Reg:	A/C S/N:
TSN:	CSN:	TSO:	
Task: UNSCHEDULED			Sequence: 1

Work Required:

CARRY OUT NDT INSPECTION (LIQUID PENETRANT) ON 17 CROSSTUBES

ITEM ID: D212-664-101 FWD CROSSTUBE - HIGH

- 1 - WORK ORDER ID#: 124665
- 2 - WORK ORDER ID#: 124667
- 3 - WORK ORDER ID#: 124664
- 4 - WORK ORDER ID#: 124666
- 5 - WORK ORDER ID#: 124061

ITEM ID: D212-664-201 AFT CROSSTUBE - HIGH

- 5 - WORK ORDER ID#: 124061
- 6 - WORK ORDER ID#: 124060
- 7 - WORK ORDER ID#: 124059

ITEM ID: D407-667-205RLC AFT CROSSTUBE - HIGH 407

- 8 - WORK ORDER ID#: 124889
- 9 - WORK ORDER ID#: 124891
- 10 - WORK ORDER ID#: 124890

SP/4-10-29

ITEM ID: D350-748-101 FWD CROSSTUBE

- 11 - WORK ORDER ID#: 122970
- 12 - WORK ORDER ID#: 110732
- 13 - WORK ORDER ID#: 111492

ITEM ID: D350-748-201 AFT CROSSTUBE

- 14 - WORK ORDER ID#: 113064
- 15 - WORK ORDER ID#: 110107
- 16 - WORK ORDER ID#: 113066
- 17 - WORK ORDER ID#: 113065

Action Taken:	Date:	Initial/Stamp:
LIQUID PENETRANT INSPECTION CARRIED OUT ON ITEMS LISTED ABOVE (ITEMS 1-17) AS PER ASTM1417M-13 NO CRACK FOUND Pen: ZL-56 BATCH# 09H094 EXP. DATE: AUG 2014, DEV: SKD-S2 EXP. DATE: OCT2017 CLEANER: SKC-S EXP. DATE: APR 2018	OCT 20 2014	 b

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

Signature:	ACA/SCA Stamp	Date:
Name: ANTONINO MARCHETTA		OCT 20 2014

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID **PO26273**

Purchase Order Date 10/28/2014

PO Print Date 10/29/2014

Page Number 6 of 8

Order From :

SKYSERVICE
6120 MIDFIELD ROAD
MISSISSAUGA, ONTARIO L5P 1B1
CANADA

VC-SKY001

Ship To :

DART AEROSPACE LTD
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

Contact Name

Vendor Phone

905-678-5636

Ship To Contact

Ship To Phone

Ship Via:

Delivered

Ship Acct:

Buyer

Chantal Lavoie

Customer POID

Customer Tax #

10127-2607

Terms

Net 30

Currency

CAD

FOB

FCA - (Free Carrier)

Line Total:

\$98.5

15 113064

D350-748-201
CROSSTUBE

10/29/2014

1.00

\$98.53

\$98.5

Yes

4 7:07:00 AM

AS ABOVE

Line Total:

\$98.53

16 124890

D407-667-205RLC
CROSSTUBE

10/29/2014

1.00

\$98.53

\$98.53

Yes

4 7:07:00 AM

AS ABOVE

Line Total:

\$98.53

17 124891

D407-667-205RLC
CROSSTUBE

10/29/2014

1.00

\$98.53

\$98.53

Yes

4 7:07:00 AM

AS ABOVE

Note:

10/29/2014

DQA:

Date: 15/03/25



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed:

Date: 15/03/24

Work Order update only ☐

Work Order: 124890	DISPOSITION		AGAINST DEPARTMENT/PROCESS			
Part No. D407-667-205 RLC	Rework ☒	Skid-tube ☐	Crosstube ☒	Water Jet ☐	Engineering ☐	
NCR No. 15-4705	Scrap ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	
	Use-as-is ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	
	Suspected Unapproved ☐	Large Fab ☐	Composite ☐	Supplier ☐		

Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design	14/11/13	230	1	Center support is at 12.30.	DAS 12 9-89	Reposition center support per dwg (14°)		DAS 9 9-89 15.03.18	
Doc/Data				Chafing shield seam is being fixed (dwg is not clear).	14/11/13	Reposition chafing shield so seam faces aft. ↓		DAS 30 9-89	
Equip/Tooling				PC. OKMMA SIKKON/		Remove/clean/Alodine	DAS 41 14.06.16		
Handling/Pre				Part was not verified before install.		Inspect for damage		DAS 38 9-89	15/01/13.
Material									
Operator									
Offset/Setup									
Process									
Supplier									
Training									
Transport									
Unapproved									

FAULT CATEGORY Paint B#130531

Inspect paint

NOV 21 2014

Landing Gear		General		FAULT CATEGORY	
☐ Bending	☐ Bend	☐ Folio/Program	☐ Outside Dimensions	☐ Pressure/Forced	
☐ Centre Not Concentric	☐ BOM/Route	☐ Grain	☐ Over/Under tolerance	☐ Set-up	
☐ Cracks	☐ Broken/Damage/Defect	☐ Hardware	☐ Part Incorrect	☐ Temperature/Cure	
☐ Crimp/Kink/Ripple/Wave	☐ Burrs	☐ Inspection Incomplete/Unqualified	☐ Part Lost/Missing	☐ Weld	
☐ Cuffs	☐ Contamination	☐ Instructions Incomplete/Unclear	☐ Part Moved	☐ Wrong Stock Pulled	
☐ Crushing	☐ Countersink	☐ Misaligned/off center	☒ Positioned Wrong	☐ Other	
☐ Heat Treat	☐ Cut Too Short	☐ Mislabeled	☐ Power Loss/Surge		
☐ Inspection Strip in Tube	☐ Drawing	☐ Misread			
☐ Marks/Chatter	☐ Drill Holes	☐ Off-set			
☐ Turning Sequence	☐ Finish	☐ Out of Calibration			
☐ Wave/Twist in Tube	☐ Fit/Function	☐ Out of Sequence			